AMENDMENTS TO THE CLAIMS

1. (original) An organic polymer memory element stable to repeated WRITE and READ operations, the organic polymer memory element comprising:

a first electrode;

a second electrode; ~~and~~

a conductive organic polymer layer between the first electrode and the second electrode, the conductivity of which detectably decreases following introduction of electrons under applied voltage potential;

the memory element repeatedly ~~writable~~ written by application of a WRITE threshold to place the organic polymer layer into a first conductivity state, the WRITE threshold one of

a relatively high-voltage voltage potential, and

a relatively long-duration voltage potential; and

the memory element repeatedly ~~readable~~ read by application of a READ threshold to place the organic polymer layer into a second conductivity state, the READ threshold a relatively low voltage potential for a length of time less than a time needed for electrons to enter the organic polymer layer following application of a voltage potential to the electrodes.

Please cancel claims 2-3.

4. (original) The organic polymer memory element of claim 1 further including an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer raising the voltage potential needed to inject electrons from the adjacent electrode through the electron-blocking layer into the organic polymer layer.

5. (original) The organic polymer memory element of claim 1 further including an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer having a voltage threshold for electron injection below which few electrons are injected and above which electrons are readily injected.

6. (original) The organic polymer memory element of claim 5 further including a hole injection layer that increase the hole injection rate upon trapping electrons

7. (original) The organic polymer memory element of claim 1 further including an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer having a time delay for electron injection.

8. (original) The organic polymer memory element of claim 1 further including an indium-tin-oxide/PEDT-PSS layer electron-blocking layer.

9. (original) The organic polymer memory element of claim 1 further including an electron-and-hole blocking layer between one of the two electrodes and the organic polymer layer, the electron-and-hole blocking layer raising the voltage potential needed to inject electrons from the adjacent electrode through the electron-blocking layer into the organic polymer layer when a voltage potential of a first polarity is applied to the memory element, and raising the voltage potential needed for hole injection into the organic polymer layer when a voltage potential of a second, opposite polarity is applied to the memory element.

10. (original) The organic polymer memory element of claim 1 used for each element of an array of memory elements.

11. (original) The organic polymer memory element of claim 1 used for each element of an array of memory elements employed in a polymer-based electronic device selected from among:

an electronic memory;
a processor;
a controller;
an image recording device;
an audio recording device; and
an electronics communication device.

12. (original) A method for operating an organic-polymer-based memory element including an organic polymer layer between two electrodes, the method comprising:

determining a threshold the length of application of a relatively low voltage potential to the memory element during which no electrons are injected into the organic polymer layer; and

when applying a relatively low voltage potential to the memory element to read the conductivity state of the organic polymer layer, applying the relatively low voltage potential to the memory element for a time less than the determined threshold

13. (original) The method of claim 12 further including:

introducing an additional electron blocking layer between an electrode and the organic polymer layer.

14. (original) A method for operating an organic-polymer-based memory element including an organic polymer layer between two electrodes, the method comprising:

identifying an electron-blocking substance;

introducing an additional electron blocking layer between an electrode and the organic polymer layer comprising the identified electron-blocking substance.

15. (original) The method of claim 14 further including:

determining a threshold the length of application of a relatively low voltage potential to the memory element during which no electrons are injected into the organic polymer layer; and

when applying a relatively low voltage potential to the memory element to read the conductivity state of the organic polymer layer, applying the relatively low voltage potential to the memory element for a time less than the determined threshold

16. (original) The method of claim 14 wherein the electron blocking layer raises the voltage potential needed to inject electrons from the adjacent electrode through the electron-blocking layer into the organic polymer layer.

17. (original) The method of claim 14 wherein the electron blocking layer has a voltage threshold for electron injection below which few electrons are injected and above which electrons are readily injected.

18. (original) The method of claim 14 wherein the electron blocking layer has a time delay for electron injection.

19. (original) An organic polymer memory element included in an electronic device comprising:

a first electrode;

a second electrode;

a conductive organic polymer layer between the first electrode and the second electrode, the conductivity of which detectably decreases following introduction of electrons under applied voltage potential, the memory element repeatedly writable by application of a WRITE threshold to place the organic polymer layer into a first conductivity state and repeatedly readable by application of a READ threshold to place the organic polymer layer into a second conductivity state; and

an electron-blocking means.

20. (original) The organic polymer memory element of claim 19 wherein a WRITE threshold is one of:

a relatively high-voltage voltage potential; and

a relatively long-duration voltage potential.

21. (original) The organic polymer memory element of claim 19 wherein a READ threshold is a relatively low voltage potential for a length of time less than a time needed for electrons to enter the organic polymer layer following application of a voltage potential to the electrodes.

22. (original) The organic polymer memory element of claim 19 wherein the electron-blocking means is an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer raising the voltage potential

needed to inject electrons from the adjacent electrode through the electron-blocking layer into the organic polymer layer.

23. (original) The organic polymer memory element of claim 19 wherein the electron-blocking means is an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer having a voltage threshold for electron injection below which few electrons are injected and above which electrons are readily injected.

24. (original) The organic polymer memory element of claim 19 wherein the electron-blocking means is an electron-blocking layer between one of the two electrodes and the organic polymer layer, the electron blocking layer having a time delay for electron injection.

25. (original) The organic polymer memory element of claim 19 wherein the electron-blocking means is an electron-and-hole blocking layer between one of the two electrodes and the organic polymer layer, the electron-and-hole blocking layer raising the voltage potential needed to inject electrons from the adjacent electrode through the electron-blocking layer into the organic polymer layer when a voltage potential of a first polarity is applied to the memory element, and raising the voltage potential needed for hole injection into the organic polymer layer when a voltage potential of a second, opposite polarity is applied to the memory element.